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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the present Application.

Listing of Claims

Claims 1 to 45 (canceled).

46. (Presently amended) A method comprising the steps of:

(a) functionalizing a plurality of [[solid-phase]] solid phase supports;

(b) placing simultaneously the plurality of solid phase supports in a three-dimensional (3D) array using a support transfer device, ~~wherein the support transfer device transfers a plurality of solid phase supports~~ wherein the 3D array comprises a plurality of columns of solid phase supports and a plurality of layers of solid phase supports in the Z direction, and wherein the support transfer device is a rack comprising a plurality of rods sized to be inserted through an aperture formed in each support; and

(c) performing parallel synthesis of a library of molecules in the 3D array of supports ~~with 3D diversity~~.

47. (Presently amended) The method of claim 46, ~~wherein a~~ including the step of attaching an initial building block group member to each said solid phase support is performed before the step of placing ~~the~~ said plurality of supports in the 3D array.

48. (Canceled)

49. (Presently amended) The method of claim 46, additionally comprising the step of simultaneously removing the plurality of supports from the 3D array with [[a]] the support transfer device.

50. (Presently amended) The method of claim 46, wherein following the synthesis of said library of molecules, said molecules are cleaved ~~additionally comprising the step of cleaving molecules~~ from selected supports.

51. (Presently amended) The method of claim 47, ~~wherein the supports in the 3D array are arranged in a plurality of planes stacked in a Z direction and~~ wherein the step of placing the plurality of supports in the 3D array comprises assigning at least one unique initial building block group member to each ~~plane~~ layer.

52. (Canceled)

53. (Canceled)

54. (Presently amended) The method of claim 49, wherein the step of removing the plurality of supports comprises removing one ~~Z plane~~ layer of solid phase supports at a time.

55. (Canceled)

56. (Previously presented) The method according to claim 46, wherein the solid-phase supports are fabricated using material selected from the group consisting of resin, glass, silica gel, alumina gel, cellulose, polyolefins, polypropylene, polyethylene, halogenated polyolefinds, polytetrafluororethylene, poly(chlorotrifluorethylene), polyamides, polyimides, poly(paraxylylenes), phenol-

formaldehyde polymers, and other material that may be functionalized and is compatible for use in combinatorial chemistry.

57. (Currently amended) The method according to claim [[48]] 46, wherein the supports are selected from the group consisting of ~~rods,~~ tubes, and rings~~, beads, sheets and spheres~~.

58. (Currently amended) The method according to claim 46, wherein the solid phase supports comprise a functionalized graft co-polymer of polypropylene, polyethylene, polytetrafluoroethylene, poly(chlorotrifluoroethylene) or polyolefin.

59. (withdrawn and amended) The method according to claim 46, wherein the solid phase supports comprise a functionalized graft co-polymer of a halogenated polyolefin.

60. (Currently amended) The method according to claim [[52]] 46, wherein ~~the rack~~ each of the rods further comprises an obstruction device which has a greater outer diameter than the inner diameter of the solid phase support to keep the supports immersed in liquid.

61. (Currently amended) The method according to claim [[52]] 46, wherein the ~~mechanism for preventing the removal of the supports from the rack comprises an end cap attached to one end of at least one rod~~ rack further comprises an end cap that caps a plurality of rods.

62. (Currently amended) The method according to claim [[60]] 46, wherein each of the rods further comprises an obstruction device ~~to keep the supports immersed in liquid comprises an obstruction device that limits movement of the supports on the~~

~~rods~~ which has a greater outer diameter than the inner diameter of the solid phase support so that the movement of the solid phase supports along the rod is limited.

63. (withdrawn and amended) The method according to claim [[52]] 76, wherein the transfer block includes a vacuum orifice.

64. (withdrawn and amended) The method according to claim [[52]] 76, wherein the transfer block includes a top retaining wall.

65. (withdrawn and amended) The method according to claim [[52]] 76, wherein the transfer block includes an upper gate and a lower gate.

66. (New claim) A method comprising the steps of:

(a) functionalizing a plurality of solid phase supports;

(b) placing simultaneously the plurality of solid phase supports in a three-dimensional (3D) array using a support transfer device, wherein the 3D array comprises a plurality of columns of solid phase supports and a plurality of layers in the Z direction of solid phase supports, and wherein the support transfer device is a transfer manifold which comprises of

(1) a vacuum manifold,

(2) plurality of tubes, each of which comprises

(A) a first end that is connected to the vacuum manifold, and

(B) a second end communicating with the first end and being subject to suction when vacuum is applied to the vacuum manifold, the suction being applied to extract a solid phase support from each of pluralities of selected columns of said 3D array; and

(c) performing parallel synthesis of a library of molecules in the 3D array of supports.

67. (New claim) The method of claim 66, including the step of attaching an initial building block group member to each said solid phase support is performed before the step of placing said plurality of supports in the 3D array.

68. (New claim) The method of claim 66, additionally comprising the step of simultaneously removing the plurality of supports from the 3D array with the support transfer device.

69. (New claim) The method of claim 66, wherein following the synthesis of said library of molecules, said molecules are cleaved from selected supports.

70. (New claim) The method of claim 67, wherein the step of placing the plurality of supports in the 3D array comprises assigning at least one unique initial building block group member to each layer.

71. (New claim) The method of claim 68, wherein the step of removing the plurality of supports comprises removing one layer of solid phase supports at a time.

72. (New claim) The method according to claim 66, wherein the solid-phase supports are fabricated using material selected from the group consisting of resin, glass, silica gel, alumina gel, cellulose, polyolefins, polypropylene, polyethylene, halogenated polyolefinds, polytetrafluororethylene, poly(chlorotrifluorethylene), polyamides, polyimides, poly(paraxylylenes), phenol-formaldehyde polymers, and other material that may be functionalized and is compatible for use in combinatorial chemistry.

73. (New claim) The method according to claim 66, wherein the supports are selected from the group consisting of rods, disks, tubes, rings, beads, sheets and spheres.

74. (New claim) The method according to claim 66, wherein the solid phase supports comprise a functionalized graft co-polymer of polypropylene, polyethylene, polytetrafluoroethylene, poly(chlorotrifluorocthylene) or polyolefin.

75. (New withdrawn claim) The method according to claim 66, wherein the solid phase supports comprise a functionalized graft co-polymer of a halogenated polyolefin.

76. (New claim) A method comprising the steps of:

(a) functionalizing a plurality of solid phase supports;

(b) placing simultaneously the plurality of solid phase supports in a three-dimensional (3D) array using a support transfer device, wherein the 3D array comprises a plurality of columns of solid phase supports and a plurality of layers in the Z direction of solid phase supports, and wherein the support transfer device is a transfer block comprising:

(1) a plurality of recesses, the recesses being sized to receive one or more supports and being spaced to substantially align with a plurality of wells of the 3D array;

(2) at least one gate slidably engaged with the transfer block, each gate having a plurality of apertures formed therein, wherein sliding the gate into an open position allows one or more supports to pass through apertures in the gate and sliding the gate into a closed position withholds supports from passing through the gate; and

(c) performing parallel synthesis of a library of molecules in the 3D array of supports.

77. (New claim) The method of claim 76, including the step of attaching an initial building block group member to each said solid phase support is performed before the step of placing said plurality of supports in the 3D array.

78. (New claim) The method of claim 76, additionally comprising the step of simultaneously removing the plurality of supports from the 3D array with the support transfer device.

79. (New claim) The method of claim 76, wherein following the synthesis of said library of molecules, said molecules are cleaved from selected supports.

80. (New claim) The method of claim 77, wherein the step of placing the plurality of supports in the 3D array comprises assigning at least one unique initial building block group member to each layer of solid phase suppports.

81. (New claim) The method of claim 78, wherein the step of removing the plurality of supports comprises removing one layer of solid phase supports at a time.

82. (New claim) The method according to claim 46, wherein the solid-phase supports are fabricated using material selected from the group consisting of resin, glass, silica gel, alumina gel, cellulose, polyolefins, polypropylene, polyethylene, halogenated polyolefinds, polytetrafluororethylene, poly(chlorotrifluorethylene), polyamides, polyimides, poly(paraxylylenes), phenol-formaldehyde polymers, and other material that may be functionalized and is compatible for use in combinatorial chemistry.

83. (New claim) The method according to claim 76, wherein the supports are selected from the group consisting of rods, disks, tubes, rings, beads, sheets and spheres.

84. (New claim) The method according to claim 76, wherein the supports comprise a functionalized graft co-polymer of polypropylene, polyethylene, polytetrafluoroethylene, poly(chlorotrifluoroethylene) or polyolefin.

85. (New withdrawn claim) The method according to claim 76, wherein the supports comprise a functionalized graft co-polymer of a halogenated polyolefin.